

Stress and Vowel Harmony Domains in Turkish

Author(s): Michael Dobrovolsky

Proceedings of the Twelfth Annual Meeting of the Berkeley Linguistics Society (1986), pp. 61-71

Please see “How to cite” in the online sidebar for full citation information.

Please contact BLS regarding any further use of this work. BLS retains copyright for both print and screen forms of the publication. BLS may be contacted via <http://linguistics.berkeley.edu/bls/>.

The Annual Proceedings of the Berkeley Linguistics Society is published online via [eLanguage](#), the Linguistic Society of America's digital publishing platform.

Stress and Vowel Harmony Domains in Turkish

Michael Dobrovolsky
University of Calgary

The paradox, however, is that sciences exist, in countless number...systems abound, unbelievable systems, beautifully constructed, or else sensational in effect.

-Borges. Tlön, Uqbar, Orbis Tertius

Introduction

It appears only natural to assume a unified treatment of word-stress and vowel harmony in Modern Standard Turkish, since both processes appear to be word-based. Word stress falls on the rightmost syllable in unmarked forms, while the domain of vowel harmony is equated definitionally with the domain of the word.

This paper contends that stress and vowel harmony in Modern Standard Turkish are non-unified processes, each of which requires specification of its own domain of application. Such a view will not seem unusual to adherents of autosegmental or tiered approaches to phonology. The larger topic of this paper is a study in the history - or perhaps historiography - of how a shift in theoretical perspective towards a tiered analysis enables us to exclude two earlier analyses of certain anomalous suffixes in Turkish as artifactual. These analyses viewed suffixes which do not take stress or 'permit' stress to shift through them towards the right boundaries of words as enclitics or as marked with a special boundary or a unique phonological property.

I will begin with an examination of the two hypotheses about stress-anomalous suffixes in Turkish and sketch a proposal for dealing with them in a tiered framework. I will then briefly look at vowel harmony domains and show how they are not equatable with stress domains. Finally, I will suggest a reason for why what I believe to be essentially incorrect or artifactual analyses of stress have emerged.

1. Stress-anomalous forms as enclitics

Unmarked stress in Turkish, an exclusively suffixing language, maintains its position on the right margin of forms:¹

1. át	'horse'	atlár	'horses'
atlarím	'my horses'	atlarímíz	'our horses'
atlarímizdá	'on our horses'	atlí	'horsman'

The stress anomalous suffixes never carry main stress and do not allow it to 'pass through' them. Prominent among the 14 such forms (the figure is taken from Lewis 1967) are the Negative (NEG), Interrogative (INT), and Copula (COP) suffixes. I am excluding the non-final stress of vocative and imperative forms here as special cases of morphological conditioning.

2. gelejék	'he'll come'	gélmiyejèk	'he won't come'	NEG
gelír	'he's coming'	gelírmi?	'is he coming?'	INT
gelírsin	'you are coming'	gelírmisìn?	'are you coming?'	INT COP
emin	'certain'	emínim	'I'm certain'	COP

Lewis makes a distinction between enclitic suffix and enclitic word which is based on Turkish orthography and which I shall for the moment ignore here.

Although there are interesting problems associated with other stress-anomalous forms, I will limit myself in this paper to dealing with the verbal affixes noted above. Lewis claims that the entire set of forms is enclitic, and defines the term as follows: "... [enclitics] themselves are never accented but throw the accent onto the preceding syllable" (p. 23). He notes further:

Part of the controversy about Turkish accentuation is over the question whether these suffixes are properly described as enclitic or atonal, i.e., without accent.

Lewis's claim that this class is enclitic rests on the stress patterning of compounds followed by a stress-anomalous form. His example follows:

3. *báś bakàn* 'prime minister' : *báśbakánla*
head minister

This form shows typical compound stress, in which the leftmost of two primary word stresses is primary in the compound. When suffixed with *-la* 'with', Lewis claims that 'the accent before *-la* [is] at least as noticeable as that on *bas*', which suggests that the suffix is correlated with the stress on the syllable before it, or, in Lewis's terms, 'throws the accent onto the preceding syllable'.

Though it is not unfeasible to treat clitics dynamically, clitics have been traditionally viewed as unstressed morphemes perceived as bound - but not suffixed - to another form. Our understanding of clitics is far from complete, but several definitions selected from the literature show the consensus.

An atonic form which is treated as if it were part of the preceding word is an *enclitic*. (Bloomfield 1933, p. 127).

A word in an unstressed form attached to another word which carries the stress. (Hartman and Stork 1972)

[clitics are] neither full words nor, in the strict sense, merely prefixes or parts of a word. Instead they belong to an intermediate class . . . unaccented words which must lean for support (the term 'clitic' is ultimately from the Greek word for 'leaning') on a neighboring full word in their construction. (Matthews, 1974, p. 168).

. . . bound morphemes attached to (free) words. (Zwicky and Pullam 1983).

These definitions reflect two widely accepted characteristics of clitics: (1) they are alternant or suppletive forms of free morphemes which may be (a) reduced, unstressed alternants of stressed, unreduced forms (as in English *is/s*), (b) unstressed and unreduced alternants of stressed forms (as in Modern Greek (Warburton 1977)), or (c) unstressed suppletive alternants of stressed forms (as in French *moi/je*, and (2) they are perceived as forming a phonological unit with their hosts, this perception arising out of the fact that they form a single stress-group with the hosts.

Another claim about clitics emerges in the discussions by Mathews 1974 and Kaisse 1981: clitics are positioned by syntactic rule and do not form part of morphological operations. In other words, there is no host-clitic paradigm (see Zwicky and Pullam's Condition A, below).

By these criteria alone, the majority of suffixes in Lewis's list are suspect as enclitics. Only *-la* 'with' is a reduced form (of the postposition *ile*), though the copula forms can be interpreted as resulting from the reduction of a

verb+person suffix as will be noted below. Nor are they unstressed alternants of stressed forms (again with the exception of *-la*). Nor do they always lean on free forms (again *-la* does; it is a true clitic). To my ear, its perceived stress equivalency with its host varies with syntactic position and degree of emphasis. One Turkish consultant insists that the main stress is on *baş*, as in other compounds, even when *-la* is affixed. But there are more extended reasons for not considering the stress-anomalous suffixes of Turkish to be true enclitics.

In the recent literature, a number of general principles for defining clitics on the basis of their combinatory properties and morphophonological patterning have been proposed. Both Kaisse 1981 and Quicoli 1982, for example, refer to the principle known as Wackernagel's Law - that clitics occur in 'second constituent position'. Quicoli also proposes that clitics 'gravitate' around verbs.

Some of the Turkish stress-anomalous suffixes do form part of the verbal complex, and others do occur in second constituent position. However, there are many examples of true affixes which also occur with verbal forms and/or in second constituent position in Turkish, so these criteria are not enough to classify the stress-anomalous forms one way or the other.

Zwicky and Pullam (1983) (ZP) propose a set of five conditions which distinguish between clitics and affixes. I review these criteria below, comparing ZP's examples from English with some from Turkish; I also include examples from Serbo-Croatian and Portuguese for purposes of expansion and comparison. (Further proposals in Zwicky 1985 deal with distinguishing clitics from words - I will not deal with these here).

ZP Criterion A: Clitics show low degree of selection with respect to their hosts. (The 'promiscuity principle' - clitics occur with various types of lexical or even phrasal categories)

English. *'s* 'is', *'s* 'has' and *'ve* 'have' occur enclitically after prepositions, verbs, adjectives, nouns, and pronouns.

Serbo-Croatian. Pronoun clitics show full and reduced forms. Among them are *njega/ga* 'him, it' Accusative; *nju/ju/je* 'her, it' Accusative. The pronoun clitics occur regularly in second constituent position and so follow various hosts; they can also follow each other. Examples: *Vidim ga* 'I see him'; **Ga vidim*. *Znam da ga znate* 'I know that you know him'; **Znam da znate ga*.

Portuguese. Among the pronoun clitics, third person masculine *o* and feminine *a* direct object pronoun clitics alternate with the full forms *ele* and *ela*, respectively. These forms occur in second-constituent position: *tenho-o* 'I have it', *não o tenho* 'I don't have it', *Onde o vendem* 'Where do they sell it?'. In speech, unstressed forms also occur preverbally: *o vejo* 'I see him', but stressed forms occur postverbally: *vejo ele/ela*.

Turkish. The negative *-me* follows the derived verb stem and is always followed by aspectual suffixes and tense: *ölmek* 'die', *ölmemek* 'not die', *öldürmek* 'kill' *öldürmemek* 'not kill'. The interrogative *mi* co-occurs with virtually any form. It could be argued that underlying its appearances with diverse hosts is an optional copula, so that the presence of the interrogative really reflects a copula phrase and not a promiscuous clitic. In verbal derivations, the position of the interrogative marker is fixed after the derived stem, (optional) negative marker, and aspect markers. There are no forms like **gel-mi-iyor?*, where *mi* is the interrogative.

ZP Criterion B: Arbitrary gaps in the set of combinations are more characteristic of affixed words than of clitic groups.

English. No examples of arbitrary gaps. General combinatory principles prevail.

Serbo-Croat. General combinatory principles prevail here as well, with one exception that may be a gap. The clitic copula forms (which serve as auxiliaries) are the first clitic to appear in subordinate clause forms; *Znam da ste mu ga dali* 'I know that are (aux) him it given 'I know that you gave it to him', but the 3PS copula clitic *je* is preceded by other clitics: *Znam da ti ga je dao* 'I know that he gave it to you'. Is this a gap or just a complex set of placement rules?

Portuguese: Ordering of clitics by general principles.

Turkish. Strict ordering of all suffixes.

ZP Criterion C. Morphophonological idiosyncracies are uncharacteristic of clitics and their hosts.

English. No morphophonological idiosyncracies noted.

Serbo-Croatian. No morphophonological idiosyncracies noted, with the functionally explicable exception of the dissimilation of 3PS F ACC clitic *je* to *ju* when it precedes the 3PS copula aux *je*: *on ju je video* 'he her is (aux) seen 'He saw her', not **on je je video*.

Portuguese. Several anomalies appear to contradict the criterion here. The 3P clitic forms *o, a, os, as*, when following a verb which terminates in the coronal continuants *r, s, or z*, appear as *lo, la, los, las*, and the verb-final coronal is deleted. After nasal-final verb stems (including stems with nasal vowels), the clitics appear as *no, na, nos, nas*:

damos:	damo-los	sabem-no
beber:	posso bebe-lo	dão-nos

Turkish. The anomalous stress patterning of these forms in itself constitutes a major morphophonological idiosyncrasy.

Also note the morphophonological change in the low-vowel negative *-me* when followed by a *y* (though it may well be that this change is nothing more than a low-level or postlexical phonological rule):

git	'go'
gittim	'I went'
gitmedim	'I didn't go'
gitmiyordum	'I wasn't going'

ZP Criterion D: Semantic idiosyncracies are uncharacteristic of clitics.

English, Serbo-Croatian, Portuguese. Clitic forms are unidiosyncratic semantically.

Turkish. The 3P copula form shows a semantic idiosyncrasy. In spoken forms, when it is omitted, the form is unmarked (examples from Lewis, p. 98): *bahcedeler* 'they are in the garden' (*bahçe* 'garden', *-de* Locative, *-ler* Plural). When employed other than to avoid ambiguity, the 3P copula expresses emphasis or supposition: *bahcededirler* 'they are in the garden' or 'they are surely in the garden' (the latter also *bahcedelerdir*).⁴

ZP Criterion E notes that syntactic rules cannot affect clitic groups, which seems to hold across all the languages noted here.

ZP Criterion F claims that clitics can attach to material containing clitics, but affixes cannot. Again, this holds for English, Serbo-Croat, and (?) Portuguese, but in Turkish we can find affixal material following the stress-

anomalous negative morpheme:

gitmék	'to go'
gítmemek	'not to go'
gítmemekte	'in not-going'

In the third form, the *-te* is an inflectional (locative) suffix. If the negative is an enclitic, ZP Criterion E is violated.

The form *gitmiyormusunuz* 'aren't you going?' shows the negative *-me* (here, morphophonemically *mi*) followed by the aspectual *-iyor* and the interrogative *-mu* followed by the 2PPL inflection *-sunuz*. Again, ZP E appears to be violated, if the negative and interrogative forms are classed as clitics.

If the definitions above reflect a consensus of received wisdom, and the ZP criteria reflect at least tendencies if not absolutes (as some of the conflicting data suggests), Lewis's definition of enclitics is seen to be informal and idiosyncratic. Although theoretically workable, this dynamic view is not necessary to account for the presence of stresses on the preceding syllable.

2. Stress-anomalous forms with special properties

A second tradition of analysis does not directly treat these verbal suffixes as enclitics. Perhaps there was a reluctance to label as enclitic many forms which (a) could themselves be suffixed and (b) are not found as free morphemes in unreduced or stressed form.

The line of development here is from Swift 1962 to Lees 1961 (who attributes the idea for his analysis to communication with Swift) to Foster 1969, all of whom divide Turkish suffixes into two classes, *unstressable* vs *stressable* syllables (Swift), *unstressed* or *weak* versus *stressed* or *strong* suffixes (Lees), or *prestressed* versus (?) *stressed/stressable* suffixes (Foster).

The Swift-Lees-Foster (SLF) approach views these suffixes as containing some inherent property which prevents stress from applying to them, and thus is descriptively different than Lewis's dynamic approach. In Swift's terms:

A syllable belongs to the unstressable class when none of the alternates of the morpheme contains stress on the syllabic (*sic*) in question. (p. 42)

Lees effects stress by an assignment-and-reduction algorithm too lengthy to present in detail here. The overall result effectively assigns primary and secondary stress. The key to assigning these stresses is the presence of various boundary types and diacritics which are crucial to the formulation of the stress rules:

We first specify the stress feature for all [native] vowel phonemes by introducing stress on all harmonic-base vowels; by a second rule we then strengthen to primary the stress of the last vowel of any base morpheme preceded by the harmonic or the composite-verb juncture [which is introduced by the rules which generate composite verbs in the syntactic component] (p. 42).

and

An unstressed, or weak, suffix normally requires an immediately preceding primary stress.

The end result is that some nonfinal stresses are assigned before the special word boundary \oplus , and some are assigned before the suffixes marked as weak

with a diacritic sign but not a special boundary. (as the negative *-me*).³

Foster employs a feature diacritic, [prestress], which the appropriate suffixes contain in their feature representation. He also assigns the feature to word boundaries in order for them to trigger stress on word-final syllables without recourse to curly-bracket notation.

Each of these analyses in its own way assumes prestressing to be a property of the *suffix* in question. They claim, in effect, that the suffix-type (or suffix boundary, which is a diacritic indicating suffix-type since no reference is made to the constituent structure of these forms) blocks the passage of stress. In this sense, though they are descriptively different from Lewis's dynamic approach, they are not different in principle from his analysis, which also assigns a special property (that of shifting stress back onto the preceding syllable) to these suffixes. The SLF tradition approaches treating these forms as clitics, but stops just short. Clitics appear not so much to block regular stress rules from applying but are rather exempt from stress rules; stress application to their host forms is regular.⁴ In other words, clitics act as unaffixed words which are not part of the phonological form undergoing stress assignment - a fact frequently reflected in their orthographies.⁵

In Turkish, these stress-anomalous forms appear to reflect this aspect of clitic identity in that they are exempt from the stress rules, but there are crucial differences: they may be followed by other suffixes, and they are subject to vowel harmony. At the same time, forms containing these affixes all parallel the stress pattern of compounded forms, in which primary stress falls on the leftmost of multiple stresses and the rightmost stress reduces. This pattern is manifest in all compounded forms, whether they are NN, NV, Adj N, or reduplicated Adv:

4. NN	NV	Adj N	Adv Adv
domúz etì	devám etmèk	tahtá kutù	çabúk çabúk
pig meat-3PPoss	continue do	wood box	quick quick
'pork'	'(to) continue'	'wooden box'	'very quickly'

It was this parallelism, among other factors, which led to the independent proposals of Dobrovolsky 1976 and Ozkaragöz 1981 to treat stress anomalous forms as separate phonological words (though not as enclitics), and allow final stress application to proceed regularly. Underhill 1976 refers to the stress-anomalous forms as 'unaccented' (p. 34) but also notes (p. 117) that the stress patterning 'can be accounted for by the compounding rule'.

Since those widely ignored proposals, many changes have been made in the treatment of metrics. Stress assignment in Turkish can currently be handled by any one of three approaches: Selkirk 1980, Prince 1983, and in a lexical phonology framework such as that recently proposed by Hameed 1985 (though H. does not directly address the problems raised here). It is not the object of this paper to compare the validity of these competing approaches, though Turkish might provide an interesting test case. The figure at the end of section 3 shows the derivation of multiple stresses on a verb form in an adaption of the margin-stressing framework proposed by Prince 1983. In this approach, while the word boundary marks the end of the stress domain on the word form, internal 'word' domains are also present which allow right-margin stressing to proceed regularly. These domains are sensitive to the constituent makeup of the forms and so are not characterized by special boundaries or diacritics; the boundaries instead are assigned by the constituent structure.

In the case of Turkish, these verb-internal domains (indicated by W in the figure) are made up of the negative and those suffixes which attach to it when it is present (for instance, the aspect suffixes) and the interrogative and copula groups.⁶ The leftmost of these stresses is reinforced on the next level of stress application (here marked with a C for 'compounding') as in any other phonological compound in Turkish. When these verb forms are placed in larger syntactic construction, right margin stressing again applies at the P or 'phrasal' level to reinforce the rightmost stress. In other words, there is a switching of margin stressing from right to left to right on the successive domains of phonological word, compound, and phrase.

This approach captures all word, compounding, and phrasal stressing, including that of double compounds such as *Ânkara vilayeti merkez bankası* 'Ankara province central bank', in which the individual compounds *Ânkara vilayeti* and *merkez bankası* show leftstress, but the full form is phrasal in character and shows main (right)stress on *merkez* (note that in the underlyingly non-final stressed forms *Ânkara* and *banka*, the stresses remain on the non-final syllables). This phrasal character of doubly compounded forms also surfaces in forms like *kitâb okumamak* '(the) not-reading of books', the negative of the compound *kitâb okumak*, 'book reading'. While the positive form shows expected leftstress, the negative is phonologically doubly compounded due to the presence of the negative stress domain in the verb form, and so the final form shows right-margin mainstressing.⁷

The approach I am outlining here also rejects - at least tentatively - the claim made in Klavans 1985 that these stress anomalous suffixes are clitics which first undergo suffixing and are then attached to their host (although I agree with her additional claim that they would be incorrectly viewed as endoclitics).⁸ By specifying stress domains on the basis of verb internal morphological structure, we are not obliged to view these forms as clitics.

3. Vowel Harmony Domains

Verbal forms do not always show a match between the domains of stress-groups and the domain of vowel harmony. The domain of vowel harmony is correlated with that of the word; vowel harmony does not spread across word boundaries in Turkish. But there are cases of verbal forms which do not show a match between word-internal vowel harmony and word boundary domains.

As is widely known, Turkish vowel harmony is of two types. Low vowel harmony takes place along a front-back axis, and shows only two alternates e and a, which correlate with the backness feature of the preceding vowel. I shall represent these alternations archiphonemically with E. High vowel harmony is sensitive to the rounding of a preceding vowel as well as its backness. It shows the alternates i, ü, ı, and u, and is represented archiphonemically as I.

- | | | | |
|----|----|--------------------|--------------------|
| 5. | a. | <i>gidiyorum</i> | 'I am going' |
| | | <i>görüyorum</i> | 'I am seeing (it)' |
| | b. | <i>alabilirim</i> | 'I can take' |
| | | <i>görebilirim</i> | 'I can see (it)' |

The examples in (a) show the progressive aspectual suffix *-(I)yor*, which contains a back rounded vowel, affixed to front unrounded and front rounded vowel verb stems. Suffixes following the aspectual affix conform harmonically to its vowel. The examples in (b) show the 'potential' suffix *-(y)Ebil* ((y)E-bil in some analyses) with its high front unrounded vowel affixed to a back vowel verb

stem and a front rounded vowel verb stem. Again, the expected word domains of back and front vowel harmony, respectively, are broken up, and suffixes following the harmony-anomalous affixes conform to the 'new' vowel. The break in domain is of course internal to the word domain. For a thorough analysis of anomalous vowel harmony in Turkish, see Clements and Sezer 1982.

The parallels with stress assignment are straightforward. Once again, but here perhaps more obviously, it is necessary to allow distinct domains of application word-internally in order to correctly specify the general application of a rule on a free form. The Potential suffix is particularly interesting, since it shows that the anomalous vowel domain may not be a property of the whole morpheme, but begins with a specific morpheme-internal syllable. When preceded by a vowel-final stem, the first vowel of the suffix is preserved by the presence of an underlying *y* (otherwise deleted after consonant final stems), and it undergoes the expected vowel harmony pattern:

6. a. *anla-* 'understand'
anliiyabilir 'he can understand' (where *a* → *i*/___*y*)
 b. *oku-* 'read'
okuyabilirim 'I can read'

The forms cited here also show that the domains of stress and vowel harmony do not match, and that varying domains of application must be specified within the boundaries of a single word form.

7. *alıyorum* 'I'm taking (it)' (in one dialect)
alıyórum 'I'm taking (it)' (another dialect)
alabilirim 'I can see'

The following figure shows this autonomy of specification for stress assignment and vowel harmony. The form displayed is *onu bulabilirmisin* 'can you find it?'

STRESSING			
P		+	rt. margin
C		+	lft. margin
W	+	+	rt. margin
σ	++	+ + + + + +	all
onu bulabilirmisin			
σ		+hi +lo +hi +hi +hi +hi +rd -rd -rd	phonemic features
HW		+BACK -BACK - ROUND	harmonic features
VOWEL HARMONY			

Structure: ## on + u # bul + a bil + ir + mi + sin ##

it + OBJ find + POTENTIAL + AORIST + INTERROGATIVE + 2P SING COP

4. The word is a clustering of domains

The word as a linguistic primitive is indispensable to the analysis of both stress and vowel harmony in Turkish. Word boundaries determine the placement

of the last stress in a form, and vowel harmony does not cross word boundaries. I have claimed that one analysis of stress has led to a dubious assignment of clitic status to certain suffixes in Turkish, while another line of analysis has proposed unnecessary mechanisms for assigning stress in the form of ad hoc boundaries and diacritics. Why did this come about? I believe the cause lies in our attachment to the idea of the word as a unitary domain. Both traditions attempted the impossible feat of trying to preserve the word as a unitary form and break it up into domains of application at the same time within a linear framework of analysis. As a consequence of this, special properties had to be assigned to affix types or special boundaries inevitably multiplied.

Once it is allowed - for better or for worse - that the unitary free-form *word* may be made up of a number of autonomous phonological domains, a different view of the relationship of various phonological processes can emerge. In the case of Turkish, this view permits stress assignment on both putative universal (margin stressing) and evident language specific (alternate margin stressing) grounds, and also permits some tentative universal definitions of clitics to be maintained. Although it may well be claimed that the stress-anomalous affixes of Turkish are 'funny' clitics, a tiered analysis employing independent domains shows that many of the forms need not be treated as clitics at all.

FOOTNOTES

Thanks are due to Herb Izzo for help with Portuguese, and to Sabahat Tura and Karl Zimmer for valuable comments on this paper. They bear no responsibility for the outcome. I wish Ellen Kaisse had said more.

1. Anomalous stresses on borrowed forms and other types of non-final stress need not be considered here. See Sezer 1981 for a thorough treatment of this phenomenon.
2. It might be felt that this example reflects differences in suffix ordering, but I don't believe this is the case. The order here more likely reflects the fact that the copula can be inflected for plurality.
3. For another interpretation of boundaries and their relationship to various phonological rules in Turkish, including stress, see Kardestuncer 1982, which I have unfortunately not been able to incorporate here due to space limitations.
4. Though there are some apparent cases of clitic placement affecting accent, as in Classical Greek (Klavans 1985, p. 98). But is this reference to the pitch accent of Classical Greek? And if so, is this accent subject to the same kind of phonological constraints as stress?
5. This is the case in Turkish for the INT, among other forms, which is sometimes written as - and also felt to be - a separate word. It is this fact which leads Lewis (pp. 23-24) to distinguish between clitic suffixes and clitic words.
6. There is a very strong case for treating the copula endings as a part of a separate domain since they optionally appear affixed to the underlying copula verb *t-* in some instances: *hazır idî* vs *hazırđı* 'he was ready'
7. Thanks are due to Jorge Hankamer for bringing up the issue of *kitab okumamak*.

8. This is of course a shamefully brief treatment of K's rich and complex set of proposals, excusable only because the aim of this paper is to deal with the motivation behind the Lewis and SLF traditions of analysis.

REFERENCES

- Bloomfield, Leonard. 1933. *Language*. New York: Holt, Rineheart and Winston.
- Clements, George N. and Engin Sezer. 1982. Vowel and consonant disharmony in Turkish. In van der Hulst, H. and N. Smith (eds) *The structure of phonological representations*, volume II. Dordrecht: Foris Publications.
- Dobrovolsky, Michael. 1976. Is Turkish an agglutinating language? *Papers from the sixth meeting of the North Eastern Linguistic Society = Montreal working papers in linguistics* 6:87-101.
- Foster, Joseph F. 1969. *Some phonological rules of Turkish*. University of Illinois dissertation.
- Hameed, Jumah K. 1985. *Lexical phonology and morphology of modern standard Turkish*. *Cahiers linguistiques d'Ottawa* 14:71-95.
- Hartmann, R.R.K. and F.C. Stork. 1972. *Dictionary of language and linguistics*. New York: John Wiley & Sons.
- Kaisse, Ellen M. 1981. *Separating phonology from syntax: a reanalysis of Pashto cliticization*. *Journal of linguistics* 17:197-208.
- Kardestuncer, A. 1982. *A three-boundary system for Turkish*. *Linguistic analysis* 10:95-118.
- Klavans, Judith L. 1985. *The independence of syntax and phonology in cliticization*. *Language* 61:95-120.
- Lees, Robert B. 1961. *The phonology of modern standard Turkish (Uralic and Altaic series, 6)*. Bloomington: Indiana University Press.
- Lewis, G. L. 1967. *Turkish grammar*. Oxford: Oxford University Press.
- Matthews, P.H. 1974. *Morphology*. Cambridge: Cambridge University Press.
- Ozkaragöz, Ince. 1981. *A two-boundary analysis of the exceptions to the final-stress rule in Turkish*. *Linguistics notes from La Jolla = UCSD working papers* 8:89-112.
- Prince, Alan S. 1983. *Relating to the Grid*. *Linguistic Inquiry* 14:19-100.
- Quicoli, A. Carlos. 1982. *Some issues on the theory of clitics*. *Linguistic analysis* 10:203-273.
- Selkirk, Elisabeth O. 1980. *The Role of Prosodic Categories in English Word Stress*. *Linguistic Inquiry* 11:563-606.
- Sezer, E. 1981. *On non-final stress in Turkish*. *Journal of Turkish studies* 5:61-69.
- Swift, Lloyd B. 1962. *A reference grammar of modern Turkish (Uralic and Altaic series 19)*. Bloomington: Indiana University Press.

- Underhill, Robert. 1976. Turkish grammar. Cambridge, Mass.: MIT Press.
- Warburton, Irene P. 1977. Modern Greek clitic pronouns and the 'surface structure constraints' hypothesis. *Journal of linguistics* 13.259-281.
- Zwicky, Arnold M. and Geoffry K. Pullum. 1983. Cliticization vs. inflection: English *n't*. *Language* 59.502-513.
- Zwicky, Arnold M. 1985. Clitics and particles. *Language* 61.283-305.